Alberta has a better way

A guide to the management of special or hazardous wastes in Alberta

Alberta
Special Waste
Management
Corporation

88-01876/

What's so special about waste?

One Canadian dictionary defines waste as, "useless or worthless material; stuff to be thrown away." In doing so, it unconsciously summarizes our traditional attitudes towards waste— attitudes based on the assumption that the natural cycle of decomposition and regeneration must eventually consume all our human residues.

Today, we know better. We recognize that, while some of our waste is recyclable, and much is easily disposed of by burying, simple burning, or sewage treatment, other residues are potentially hazardous and cannot be eliminated by conventional means.

These are the so-called "special" wastes which, because of their chemical composition, require careful management and special treatment. In Alberta, they range from industrial by-products like tank bottom sludges to the half-empty paint cans in home workshops.

Improperly handled, some of these wastes can threaten human health, destroy vital living organisms, and endanger our environment. They pose a growing problem which cannot simply be swept under the rug.

Alberta produces about 92 000 tonnes of special waste every year— or approximately 37 kilograms for every person in the province. Some of these wastes are being safely managed on the site of generation. Some are in storage awaiting treatment. But significant amounts are being dumped in municipal landfills or sewage systems which are not designed for the purpose.

Now, the problem is being directly addressed through the creation of Alberta's own Special Waste Treatment Centre and by a system of special waste management, intended to protect our environment now, and for the future.

What are special wastes?

In general terms, a special waste is any discarded solid, liquid, or contained gas material which can cause problems if not handled or disposed of carefully. Wastes which can (a) cause injury or death; or (b) damage or pollute land, air or water, are considered hazardous and must be handled in accordance with federal and provincial environmental protection legislation.

Wastes are determined to be hazardous by the following characteristics. They can be **flammable**— meaning that they are easily combustible or burnable. Typical examples are painting wastes, degreasers, and other solvents.

They can be **corrosive,** meaning that they dissolve metals or other materials, or burn the skin. Used rust removers, waste acids or alkaline cleaning fluids, and old battery acid all fall into this category.

They can be **reactive,** meaning that they are unstable or that they undergo a violent chemical reaction with water or other materials. Examples are waste bleaches and other waste oxydizers.

Additionally, special wastes can be **environmental contaminants or toxic substances,** such as those containing a high concentration of heavy metals (mercury, lead or cadmium, for example) or pesticides.

It is worth remembering that special wastes are not always hazardous in all situations. Used lubricating oil, for instance, is normally considered to be harmless if collected and stored properly. However, if dumped into surface water, it can endanger an inter-dependent chain of living creatures from micro-organisms to human beings.

Are you contributing to the problem—or the solution?

The answer is largely a matter of attitude. Directly or indirectly, we are all generators of special wastes. Complex chemicals are used in the production of most of the foods, goods and services we enjoy in our everyday lives. Chemical herbicides and pesticides protect our crops from weeds and insects respectively. Chemically-made plastics are used to manufacture everything from toothbrushes to trucks. We utilize chemically-created fibres in many of the clothes we wear and even the pillows we sleep on. The manufacture of all such products generates potentially-hazardous wastes.

In Alberta, several major types of wastes have been identified. Waste oils account for 26 000 tonnes a year, not including waste oils from cars, trucks and tractors. Acids are second at 22 000 tonnes. And waste chemicals comprise more than 12 000 tonnes. However, most major waste generators are conscious of their responsibilities and have operated their own disposal systems, or employed professional disposal services, for many years.

Where there is a need for greater awareness is with the small- to medium-sized waste generators— everyone from the mid-sized manufacturer to the average householder. In order for Alberta's program for the collection and disposal of special wastes to succeed, those of us in this category must make a conscious commitment to environmental protection.

Alberta's Special Waste Management System— a positive answer

When the Government of Alberta made special waste management a priority in the late seventies, its first step was a comprehensive survey of waste levels, waste sources and waste disposal practices. This demonstrated that, while special waste disposal was not yet a significant problem in the province compared to other parts of the world, it was a potential threat to the environment, demanding early action.

At the time, methods of waste disposal were somewhat haphazard. Major industries disposed of their own wastes but smaller businesses were unsupervised and unregulated. The cumulative dangers of this unsupervised disposal became a particular concern, as did the transportation of hazardous wastes on public highways.

The result of this investigation was the creation of the Alberta Special Waste Management System— and the determination to construct a facility capable of neutralizing wastes originating in the province. With the opening of the Alberta Special Waste Treatment Centre, near Swan Hills, the latter has been successfully achieved.

The construction of the treatment plant is the first step in a three-part program. Based on a successful European model (where waste volumes are many times greater) the System's second goal is the creation of transfer stations in major cities for special waste identification and sorting, followed by the third stage— the strategic placement of smaller collection stations for consumer drop-off in subsidiary areas.

The Alberta Special Waste Management System is a cooperative effort between government and private industry.

Some typical wastes, some typical waste sources

TYPES OF WASTE GENERATED:

FLAMMABLE

Solvents

– including acetone, benzene, carbon tetrachloride, ethanol, isopropanol kerosene, methyl chloride, toluene, trichlorethelyne, varsol

CORROSIVE

Acids/alkalies

– including ammonium hydroxide, hydrochloric acid, sulfuric acid

REACTIVE

Bleaches/oxydizers

– including organic peroxides, sodium perchlorate

TOXIC

Heavy metals/pesticides/ cyanides

– including lead, mercury, arsenic, cadmium, barium, chromium and silver, and most pesticides

ENVIRONMENTAL

Bio-accumulative chemicals that multiply in the food chain

– including PCBs, mercury and some other heavy metals and pesticides such as DDT

TYPES OF BUSINESSES:

Building, cleaning and maintenance companies	Building, cleaning and maintenance companies	Building, cleaning and maintenance companies		
Chemical manufacturers	Chemical manufacturers	Chemical manufacturers	Chemical manufacturers	Chemical manufacturers
Businesses using or manufacturing cleaning agents (abrasives and fluids) and cosmetics	Businesses using or manufacturing cleaning agents (abrasives and fluids)	Businesses using or manufacturing cleaning agents (abrasives and fluids)	Businesses using or manufacturing cleaning agents (abrasives and fluids) and cosmetics	
Educational and vocational shops	Educacional and vocational shops	Educational and vocational shops		Educational and vocational shops
Equipment repair businesses	Equipment repair businesses			Electrical equipment replacement and repair businesses
Funeral service firms				
Furniture manufacturers and wood refinishers				
Laboratories (schools, hospitals, research institutions)	Laboratories (schools, hospitals, research institutions)	Laboratories (schools, hospitals, research institutions)	Laboratories (schools, hospitals, research institutions)	Laboratories (schools, hospitals, research institutions)
Laundries and drycleaners				
Metal manufacturing and plating companies	Metal manufacturing and plating companies		Metal manufacturing and plating companies	Metal manufacturing and plating companies
			Photo processing laboratories	
				Operations using old transformers, capacitors and electrical equipment (PCBs are no longer manufactured)
Other manufacturing businesses including textiles, plastics and leather				Other manufacturing businesses including textiles, plastics and leather
Pesticide end-users and application services			Pesticide end-users and application services	
Petrochemical producers				
Petroleum refining industry (oil wastes)				Petroleum refining industry (heavy metals contained in waste materials)
			Photographic processors (photo chemicals/silver)	
Printing and allied industries			Printing and allied industries	
Vehicle maintenance and body shops	Vehicle maintenance and body shops (lead acid batteries)		Vehicle maintenance and body shops	

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The Alberta Special Waste Management System undertakes the identification, receipt, movement, treatment and safe disposal of most hazardous wastes within Alberta (explosives and radio-active wastes are excluded). Such wastes can be generated by large, medium or small industries— even households.

All wastes are identified at the point at which they are accepted into the System. The company generating the waste completes a waste profile sheet and packages the material according to transportation regulations. Transportation to the assigned destination is tracked by a multi-part manifest which includes all vital information on the shipment— including the generator, carrier, receiver, and the volume and characteristics of the waste.

Similarly, comprehensive security measures are in place for the physical transportation of wastes from the generator's site or the transfer station. The wastes are first sealed in drums, then locked into specially-built safety containers— two of which sit on a flat-bed trailer. Placards inform emergency response personnel of the type of waste being hauled and all trucks are checked before departure and inspected en route.

On arrival at the treatment centre, laboratory personnel confirm, through laboratory verification, that the waste meets the description on the manifest. It is then assigned to particular treatment processes.

How special wastes are treated

The Alberta Special Waste Treatment Centre is one of the most advanced facilities of its kind in the world, capable of handling many types of waste. There are three methods of waste classification and disposal:

Organic liquids and solids are destroyed by high-temperature incineration. Hazardous by-products are removed from the resulting gases using pollution control devices. The remaining ashes, which are now inert, are disposed of in a bowl-shaped, covered landfill cell.

Inorganic liquids and solids are treated by physical or chemical methods such as neutralization or oxydation/reduction. Solid treated residues are stabilized then placed in a contained, covered landfill cell. Liquid treated residues are injected down a deep well more than two kilometres deep. This deep well is also used for all run-off water from the site, water from the truck wash, and waste water from the incinerator scrubbers. All such liquids are first tested, and treated if necessary, prior to injection.

Contaminated bulk solids—including contaminated soil, pavement, concrete and other substances— which cannot be treated by other means are stabilized, and disposed of in a landfill cell. Excavated from deep clay and lined with impervious material, this landfill is kept covered by a moveable structure to keep it dry. When the particular landfill cell is full, the structure is removed and the cell is covered with an impervious cap.

Working together for a better Alberta: your responsibility

It takes a special determination to fight environmental pollution in our industrialized society. But there is no alternative. By implementing the latest scientific and technological advances to protect the environment, the Special Waste Management System is ensuring the continuing safety and quality of life Albertans have come to appreciate and expect.

If you are a generator of hazardous wastes (and most people are) it is **your responsibility** to ensure they are disposed of correctly. Present policy seeks the voluntary compliance of Albertans with existing waste management regulations, since it is clear that all citizens share a concern for clean land, air and water. However, where such concern is not evident, regulations will be enforced.

The industries and types of waste listed here are intended as a guide to potential small-quantity generators. It is quite possible that your business or industry may generate other hazardous wastes beyond these common examples. In such cases, you are expected to determine whether such wastes are hazardous and to take the appropriate steps to ensure they are properly managed. Assistance will be provided from one of the information sources listed on the back cover.

THE ALBERTA SPECIAL WASTE MANAGEMENT SYSTEM

In 1984, the Government of Alberta established the Alberta Special Waste Management Corporation to plan, develop, oversee and manage a system of special waste treatment and disposal for provincial industries.

At the core of the System is the Alberta Special Waste Treatment Centre near Swan Hills. The facility is unique in North America and is comprehensive— meaning that it is capable of treating and disposing of a wide range of hazardous wastes through specialized processes.

FOR FURTHER INFORMATION ON THE MANAGEMENT SYSTEM:
Alberta Special Waste Management Corporation
Suite 900, Pacific Plaza, 10909 Jasper Avenue
Edmonton, Alberta T5J 3L9 1-800-252-9300 In Edmonton: 427-9300

FOR WASTE ASSESSMENT AND DISPOSAL:
Chem-Security Ltd. 1-800-642-3830

Calgary: 1323 - 44th Avenue N.E.
Calgary, Alberta T2E 6L5
(403) 250-3742
Telex 03-827569

Edmonton: P.O. Box 312
1202, 8A Street
Nisku, Alberta T0C 2G0
(403) 955-9462

FOR ASSISTANCE WITH REGULATIONS, GUIDELINES OR MANIFEST INFORMATION:
Alberta Environment
Fourth Floor
Oxbridge Place, 9820 - 106 Street
Edmonton, Alberta T5J 2J6 1-800-222-6514

FOR TRANSPORTATION INFORMATION:
Alberta Public Safety Services
10320 - 146 Street, Edmonton, Alberta T5N 3A2
1-800-272-9600, In Edmonton: 422-9600

Alberta Special Waste Management Corporation
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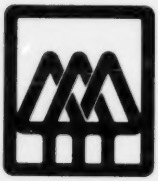
Hon. Ken Kowalski, Minister



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